



Cast of *Don't Look Up*, 6 December 2021, at Jazz At Lincoln Center

“*Don't Look Up*,” the American Dream, and An Appeal

14 December 2021

James Hansen

“Imagine a giant asteroid on a direct collision course with Earth. That’s the equivalent of what we face now.” That’s what I said in [my TED talk](#) on global warming a decade ago. *Don't Look Up*, to be released December 24 on Netflix, uses the same idea to telescope time by two orders of magnitude – from half a century needed to change global energy systems down to half a year to divert an asteroid. Six months is an action timescale that can engage the public. (I took the photo above of the stellar cast¹ of *Don't Look Up* at its world premiere.)

Scientists are frustrated as they try to communicate the emergency in both the asteroid story and the real-world climate story. Villains in the asteroid story include greedy industrialists, incompetent and corrupt government, media that abdicate responsible reporting in favor of ratings, and a public focused on tabloid entertainment. With all that headwind, can the asteroid story have a happy ending? I won’t spoil that, but the film achieves a degree of satisfaction on Earth and on a far-away planet with the help of colorful, carnivorous animals.

The real climate story faces those headwinds and more. The long timescale brings intergenerational conflict: today’s adult leaders fail to take needed actions, but today’s young people and offspring bear the consequences. The story is complex because the villain is a hero. Fossil fuels are remarkable condensed energy that has raised living standards in most of the world. The world won’t turn its back on fossil fuels without better alternatives.

The climate story could have a happy ending – but young people must play a leading role to achieve that. They have incentive and tools to fight with, but winning requires understanding the big picture. Perhaps we old people can provide information, so I address my comments to young people.

It is helpful to look first at the global picture. China and the United States together are responsible for almost half of global fossil fuel carbon emissions today, with China’s emissions more than double those of the U.S. However, climate change is driven by cumulative historical emissions, for which the U.S. is most responsible.²

During the three decades since the 1992 Framework Convention on Climate Change was agreed upon, global carbon emissions have increased about 60 percent. The 26 Conferences of the Parties (COPs) in the past three decades did not even stem emissions growth, let alone achieve the rapid emission reductions that are needed.

That is not surprising because the COP meetings did not address the two fundamental requirements to drive down global carbon emissions rapidly: (1) a simple, steadily rising carbon (oil, gas, coal) fee enforced near-

¹ Leonardo DiCaprio, Jennifer Lawrence, Meryl Streep, Cate Blanchett, Rob Morgan, Jonah Hill, Tyler Perry and more. The film is written and directed by Adam McKay. Review “That Comet? Meh. Let’s Talk Aliens.” by Ben Smith in NY Times 12/13/2021.

² Graphs are on page 17 of [A Realistic Path to a Bright Future](#), which is now paginated; a few typographical errors are corrected.

globally via border duties on products from countries without a carbon fee, and (2) development of modern nuclear power³ as cheap as fossil fuels.

A carbon fee is needed to make the fossil fuel price honest; the entire fee must be distributed uniformly to the public to achieve public acceptance and social justice. Modern nuclear power is needed as a complement to intermittent renewable energies; otherwise, the complement will be gas. If we choose gas, we choose fracking, we choose groundwater pollution, we choose methane, and we choose disastrous climate change.

These two requirements were not pulled out of a hat. They are the result of 20 years of open-minded interaction with students, conservationists, “big green” environmental organizations, utility CEOs and their technical staffs charged with “keeping the lights on,” two workshops with scientists from China and India at the East-West Center in Hawaii, and more, as described in *Bright Future*² and several draft chapters⁴⁵⁶⁷ for *Sophie’s Planet*.

The American dream was alive and well in the years after WWII, when I grew up. It’s still alive today, but not well. That’s where your opportunity comes in. We have two crises today: the climate crisis that most people don’t notice because it grows on decadal time scales, and the political crisis that is in our face.

The climate crisis cannot be solved in a decade, but it can be solved during your lifetime. This next decade, the fourth decade since the 1992 Framework Convention, is crucial for getting the climate story pointed in the right direction. This must be done in the context of fixing the urgent political crisis. If we do not fix the problem of political polarization, there is a danger that the climate situation really could go haywire.

How can young people help restore the American dream? The first step is to understand the underlying problem that has caused things to go off track. The following is in part extracted from the longer *Bright Future*².

The long-recognized underlying problem is the role that money is allowed to play in our democracy. When President Eisenhower was preparing his farewell address, in which he warned the nation of the threat of a growing military-industrial complex, an early draft of the speech described the military-industrial-congressional complex. But Ike backed off. When his brother, Milton, asked about the deletion he replied “It was more than enough to take on the military and private industry. I couldn’t take on the Congress as well.”⁸

Eisenhower’s focus on the danger of militarism for our democracy, unfortunately, had little impact. Investments in defense contractors still outperform the overall stock market.⁹ More important, the reign of the military-industrial complex leads to “wars of choice”¹⁰ that the public does not want. Our Constitution grants decision-making over war and peace to Congress, but Congress has allowed the President to usurp that role and even employ the CIA as an unaccountable secret army.

Eisenhower’s omission – the role of Congress in this distortion of the democratic process – is the fundamental problem: Congress is permitted to accept bribes under the rubric of “campaign” funds. This problem grew to a monstrous scale when the Supreme Court – supposedly the guardian of our democracy – ruled in *Citizens United* that corporations – with their vast resources – are free to participate in this vulgar, legalized corruption.

³ By modern nuclear power I refer to nuclear reactors that shut down without human intervention in case of an anomaly such as an earthquake and which keep the nuclear fuel cool without the need for external power.

⁴ Hansen, J., [Chapter 43: Energy for the World](#), draft chapter for *Sophie’s Planet*, Bloomsbury, 2022.

⁵ Hansen, J., [Chapter 44: Tell the President the Whole Truth](#), draft chapter for *Sophie’s Planet*, Bloomsbury, 2022.

⁶ Hansen, J., [Chapter 45: Energy and World Peace](#), draft chapter for *Sophie’s Planet*, Bloomsbury, 2022.

⁷ Hansen, J., [Chapter 47: China and the Global Solution](#), draft chapter for *Sophie’s Planet*, Bloomsbury, 2022.

⁸ Goodman, M.A., *National Insecurity: The Cost of American Militarism*, City Light Publishers, 464 pp., ISBN-10 0-87286-589-4, 2013.

⁹ Schwarz, J., \$10,000 invested in defense stocks when Afghanistan war began now worth almost \$100,000, *New York Times*, 16 August 2021.

¹⁰ Sachs, J., Our misguided ‘wars of choice,’ *Boston Globe*, 16 April 2017.

THE LARGEST STATEMENT *of* STUDENT GOVERNMENT LEADERS IN U.S. HISTORY

More than 350 college student government presidents – representing more than 4 million students in all 50 states – issued a bipartisan statement in support of carbon fee and dividend.

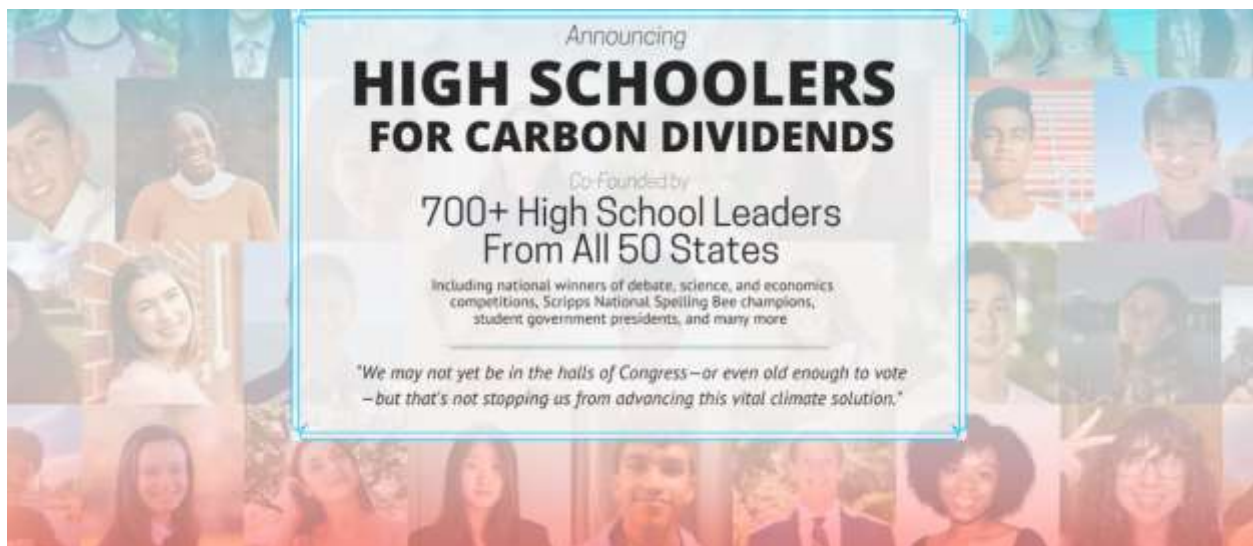
They are following the science – climate, energy and economic sciences.

Public frustration with the Washington swamp of special interests has led to the rise of extremes in both political parties. Polarized government fails to govern effectively; both parties are viewed as elitist and concerned mainly with their reelection; public frustration grows higher. Oscillation between two extremes is unstable and thus a threat to democracy – conceivably a future oscillation could lead to an autocracy.

Why do I think that young people can play a leading role in solving such fundamental, difficult problems as political polarization and global climate change? ¹¹

First, consider evidence from elections. When I gave climate talks on campuses in 2008, there was a wave of enthusiasm for upstart candidate, Barack Obama. He swept past Hilary Clinton on that wave without benefit of the establishment or big donors. Young people were the force behind that wave. Little money was needed. Skill with social media helped. In 2016, young people provided great energy to the Bernie Sanders campaign, lifting it a level that almost upended heavily favored establishment candidate, Hilary Clinton.

Second, young people can comprehend the actions needed to address climate change and they can organize support. Last year more than 350 college student government presidents made a [powerful statement](#) in support of carbon fee and dividend. They want to follow the economic science, with 100% of the carbon fee distributed to the public, so that most people come out ahead, the economy grows, and entrepreneurs and innovations help modernize energy infrastructure at no cost to the public. This year more than 700 high school leaders from all 50 states launched their own [bipartisan initiative](#) in support of carbon fee and dividend.



¹¹ Hansen, J., [Can Young People save Democracy and the Planet?](#) 8 October 2021.

These fresh-faced college and high school students are fearless (it will do your heart good to look at the photos of the hundreds of student leaders on the [S4CD](#) and [HS4CD](#) websites representing millions of students). They recognize how fee & dividend deals a heavy blow to special interests, creating a level playing field for all carbon-free energies and energy efficiency. Fee & dividend is great for competition and innovation in the private sector. It's really bipartisan: solid conservative economic principles supporting a progressive agenda to address wealth disparity, while driving the fastest solution to the climate emergency.

Really? Young people can save democracy and the planet? Indeed, young people today have the tools needed to take on the task of saving our democracy and their own future. They have the potential to revive the American dream, the idea of equal rights and opportunity for all.

First, however, I provide a couple of examples of how Washington works today. Then we can consider the fundamental changes that are needed to make government work for the public.

Early in the Obama administration, Senator John Kerry listened patiently to my plea for carbon fee and dividend, but concluded "I can't get one vote for that."⁵ Instead, the Democratic party pushed the Waxman-Markey cap-and-trade bill, with thousand pages of give-aways to countless special interests. Despite this vote-buying, the bill failed to pass, which was just as well because it was so watered down as to be ineffectual.

Then, as Citizens Climate Lobby membership grew and advocated for fee-and-dividend, Barbara Boxer and Bernie Sanders introduced a fee-and-dividend bill, but with the government taking 40% of the fee. With only 60% of the funds distributed to the public as a dividend most people lose money, so the public would never allow the fee to rise as needed. That bill's failure, too, was just as well.

What about the Biden administration; is it addressing climate change effectively? No. For example, funding for the Department of Energy's Versatile Test Reactor (VTR) is zeroed out in the 2022 budget; the VTR is needed for nuclear research and development on advanced reactors to make more efficient use of nuclear fuel and keep the U.S. as a global leader in nuclear technology.¹² After 30 years of heavy subsidies for renewable energies – which was successful in helping drive down costs – proposed Build Back Better (BBB) legislation includes eight years of additional support for renewable energy and four years of support for nuclear power, consistent with the Democrat's long-term goal to phase out nuclear power. There is abundant support for modern nuclear power among young people, but the absence of strong support from the Biden administration implies that gas will be locked in as the complement to intermittent renewable energies for generations.

It's too early to fully assess the Biden administration, which could still fundamentally alter global climate prospects by adopting zero-cost¹³ carbon fee-and-dividend. However, the fundamental problem – that policies are put together in the back room by special interests – is not being addressed by either political party. Revival of the American dream – equal rights and opportunity, and a bright future – demands a basic reassessment.



The [good energy collective](#) supports a progressive policy agenda of advanced nuclear power.

¹² Baker, .S., J.T. Gordon, J. Greenwald and J. Toth, [The VTR will play a key role in the nuclear energy innovation ecosystem](#), The Atlantic Council, Energy Source, 28 September 2021.

¹³ Cost of collecting a carbon fee at domestic mines and ports of entry is small. The IRS would send dividends electronically to debit cards or bank accounts of legal residents quarterly. The small administrative costs could be deducted from carbon fee proceeds.



Fig. 44.2. CCL members on a day of meetings with Congresspeople.⁵ Fig. numbers from *Sophie's Planet*.

Marshall Saunders was a visionary and a wonderful, generous person who believed in our democracy.

He founded Citizens Climate Lobby (CCL) in 2007 to advocate for cap-and-trade legislation to address climate change, but the next year, when he learned about fee-and-dividend, he adopted that as the goal of CCL. Marshall's volunteer army grew every year, first by thousands, then tens of thousands. Members are expected to call, visit and write letters to their Congresspeople, always being polite, and speak with staffers if the Congressperson is not available. They write op-eds and letters-to-the-editor and many travel to Washington at their own expense for efforts to educate Congress on the simplicity and effectiveness of fee-and-dividend.

In February 2009, I [testified](#)¹⁴ to the House Ways & Means Committee, opposing cap-and-trade, arguing for simple, honest, fee-and-dividend, which would spur the economy, gain public approval, and yield the fastest reduction of fossil fuel use. On the train ride back to New York I read that the number of registered climate change lobbyists had increased to 2,340 – that's four climate lobbyists for every member of Congress. CCL outnumbered the registered lobbyists, but CCL was bringing no money to the lawmakers. In a postscript as part of my written testimony, I provided an example of the competition that CCL faced: Dick Gephardt – retired former leader of Democrats in the House – received \$120,000.00 per quarter from Peabody Coal. To pay a single lobbyist at that rate, Peabody must have been confident of results. Could CCL – could democracy – compete against such legalized corruption? My advice in the postscript was “Young folks ... gird up your loins.” I was still hopeful that the determination and growing numbers of CCL members might prevail.

By February 2013, as Obama's second term began, Marshall's army of volunteers had grown to over 100,000, yet there was no serious bite for fee-and-dividend from Obama or Congress. Marshall arranged for me to give a talk in Claremont, California. Over coffee, I suggested to Marshall that for fee-and-dividend to gain traction it may be necessary to have a 3rd political party that took no money from special interests. He liked the idea. A few months later, I sent a [communication](#) to my email distribution advocating a 3rd party and got an immediate one-line response from Marshall: “I am up for whatever is best for all of life.” We decided that I should first make the case for a 3rd party in *Sophie's Planet*, which I had begun to write.

Before that, I had to write a paper on ice melt and sea level rise. We finally had a plausible explanation for why almost all global climate models were unrealistically insensitive to freshwater injection from melting Arctic and

¹⁴ Hansen, J.E., [Testimony to Committee on Ways and Means, U.S. House of Representatives, 25 February 2009, with a 1-page Post Script written after the hearing.](#)

Equal Rights and Opportunity: The Platform

1. **No funding from special interests**
Individual donations only, max = \$100?/year
2. **Party control of who/whether to run**
Avoid being spoiler if ranked voting not available
3. **Advocate ranked voting**
Begin pushing for this immediately
4. **Carbon fee & 100% dividend**
Eventually supplemented by energy fee
5. **Renew civilian control over war-making**
Congress should uphold its Constitutional duty

Antarctic ice: excessive mixing of heat into the deeper ocean, as confirmed by accurate measurement of Earth's energy imbalance. However, I was too slow, as [described elsewhere](#).¹⁵ The ice melt [paper](#)¹⁶ was submitted in 2015 and published in 2016, but Marshall Saunders died 27 December 2019, before I finished writing the book.

Now there is additional reason for a 3rd party. Political polarization arises from the public's frustration with ineffectual government. The loudest, most extreme voices gain prominence if not control of each party. Yet neither party can deliver what the public wants – good governance – because strings are pulled by the special interests that provide funding to the politicians. Witness the failure of the government to adopt a simple carbon fee to make the price of fossil fuels honest, which all economists agree is the beneficial approach.

A 3rd party that takes no money from special interests could become a strong attractive force at the center of our government. Even at a point when this 3rd party comprises only a few members of Congress, it can have a big effect as the major parties will need to compete for its support.

It seems to me that young people should take the lead in formation of a 3rd party, starting with a review of what made America special when it was at its best. Why was America attractive? The American dream of equal rights and opportunity? Here I note a few of the ideas that will be discussed in *Sophie's Planet*, Chapter 49: Equal Rights and Opportunity.

For a decade, beginning in 1994, Carolyn Harris and I ran a [program](#) – the Institute on Climate and Planets – at NASA Goddard Institute for Space Studies in New York. At any given time, it involved a few dozen students, teachers and researchers from New York City high schools (one junior high) and colleges who worked with us on NASA research projects. The students were underrepresented minorities, because one objective was to get (white, male) NASA to look more like America. The name of my research team changed as our research topic changed. The last name before funding for the program terminated was “The A-Team,” for Alternative Scenario, as described in *Storms of My Grandchildren*.¹⁷ If I could reassemble the A-Team, I would suggest that we define a proposed platform and modus operandi of a new political party, perhaps titled Equal Rights or American Dream. A few ideas are proffered in the chart above, but some of these are implementation details.

Let's start with major objectives. If we follow the Law of Three (1, 2, 3, many, and many is too many), my suggestion is: (1) Money in politics: get special interest money out of elections, (2) Military: reinstate civilian control over war-making, (3) Climate & Environment: limit human-made destruction.

¹⁵ Hansen, J., [Uncensored science is crucial for global conservation](#), foreword for Conservation Science and Advocacy for a Planet in Peril, D.A. DellaSala (ed.), Elsevier, ISBN: 9780128129883.

¹⁶ Hansen, J., M. Sato, P. Hearty, R. Ruedy, M. Kelley, V. Masson-Delmotte, G. Russell, G. Tselioudis, J. Cao, E. Rignot, I. Velicogna, B. Tormey, B. Donovan, E. Kandiano, K. von Schuckmann, P. Kharecha, A.N. Legrande, M. Bauer, and K.-W. Lo: [Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2°C global warming could be dangerous](#) *Atmos. Chem. Phys.*, **16**, 3761-3812, 2016.

¹⁷ Hansen, J., [Storms of My Grandchildren](#), ISBN 978-1-60819-502-2, Bloomsbury, New York, 2009.

Money in politics can be addressed promptly if the 3rd party accepts no money from special interests. The two major parties will be forced to deal with campaign finance reform or risk a public stampede to the 3rd party.

Military objectives and war-making are supposed to be under civilian control, according to our Constitution. We need to educate ourselves about the current situation. A recent [8-minute video](#) provides a starting point. Presumably, the military's objective is to make the United States safe. The public abhors war-making, yet both major parties initiate and continue wars the public does not want. Is this the military-industrial-congressional complex at work? Does the present approach, in which Congress abandons its Constitutional duty to authorize any commitment to war, make the U.S. safer or less safe? The public does not question the need for a strong military and the need for extensive intelligence to minimize the many threats that exist in today's world, but the public has the right to expect the Congress to live up to its Constitutional duties.¹⁸ A party that takes no money from special interests will be able to address this issue objectively.

Climate and the environment can be addressed effectively with carbon fee and dividend. As fossil fuel use is phased down, an energy fee and dividend should be considered, i.e., a fee collected from carbon-free energies as well as fossil fuels. The energy fee would discourage overconsumption, which is wasteful and harms the environment. An energy fee-and-dividend would be progressive, i.e., most people would gain financially, but wealthy people with a large energy footprint would lose money. I also argue in *Sophie's Planet* for setting aside more land for nature, a contiguous north-south corridor, incorporating some national parks, and expanding as land is added by donations and philanthropy. As I discuss in the book, Native Americans could be given a special role in maintaining that land, which should be open to all for non-destructive recreation.

Darn – the rule of three doesn't work. How can we have an “Equal Rights and Opportunity” or “American Dream” party in which the top objectives do not explicitly address disparities in opportunity? We can't divide our people into classes, with some starting out way behind others and with no realistic chance for higher education. Universal pre-K education and affordable college deserve a high location on the platform.

And what about immigration reform? When I was a post-doc and NASA was young, immigrants were a crucial part of our workforce, essential to success. We have largely shut off that talent source, foolishly. We also need a legalized worker program; there is plenty of work to be done.

It seems to me that most of the public wants the American dream to be restored – it's what makes America tick. Yes, I know many of you love Bernie Sanders. I love him and his honesty, too, but America never was and never will be a socialist state. America flourishes best on the American dream of equal rights and opportunity, not socialism. But we must take actions to help assure that equal rights and opportunity actually exist for all Americans. If we do that, we will do well, and continue to be world leaders in innovation.

Young people, you must take charge of your future and define your political platform. It's an urgent challenge, yet a remarkable opportunity. We have reached a political crisis in the United States with growing polarization of our two political parties. This decade just may determine the future of your nation and life on the planet.

Policy about China is another crucial topic that our government is mishandling. Future climate depends on China, India and other nations with hundreds of millions of people intent on raising their living standards. Yet, paradoxically, these people are not the main cause of climate change. The paradox is explained by the fact that the West burned up most of the allowable carbon budget before the East got started in a big way.

¹⁸ It's good to take a long view. America didn't enter World War II until we were attacked. We emerged from the war as an admired nation and were generous to vanquished and to allies worn down by the proximity and length of the fighting. Since then, our military-industrial-congressional complex encouraged war-making worldwide, ostensibly to make us safer. Many wars are small and hidden from the American public, but in nations where fighting occurs the public is usually aware of American involvement. The secret and public wars create ill-will toward America and may make us less safe, rather than safer. Returned soldiers from our interventions in the Middle East, maimed and often depressed, are a continual reminder of our folly; yet our loss pales compared with the devastation wrought on the people in the Middle East. Partial redemption is possible. Remarkably, the Vietnamese seem to have forgiven us, as they strive now to raise their standard of living.

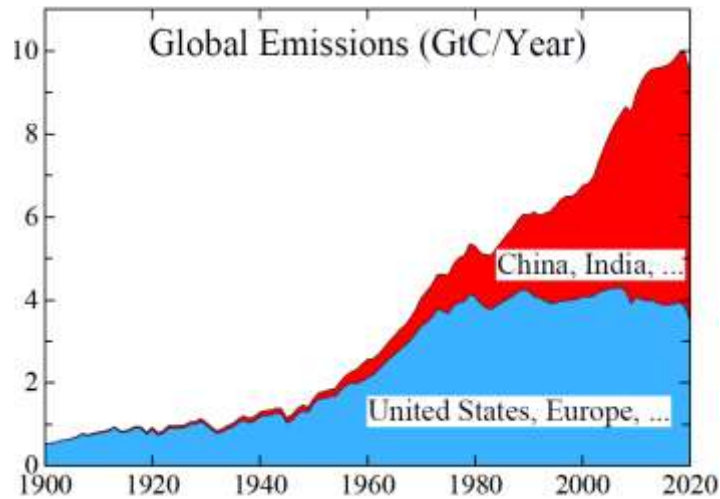


Fig. 47.1. Fossil fuel CO₂ emissions from mature (blue) and emerging economies.⁷

Global warming is accurately proportional to cumulative (historical) carbon emissions.¹⁹ Future warming will largely depend on emissions from China, India and the rest of Asia Pacific (graph above) – mainly China – yet on a per capita basis the contribution to climate change by these countries will remain small compared with the contributions of the United States, the United Kingdom and Germany (bar graph below).

Science and commonsense dictate that we have an obligation – especially to our own children – to tell the truth and to work with China to find ways to raise living standards while shifting to clean energy sources as rapidly as practical. President Trump said that climate change is a hoax and if it’s not a hoax then it’s caused by China. President Biden – perhaps from fear of being labelled “weak” – tends to be hostile toward China.

The 3rd party should honestly evaluate our relationship with China and our mutual dependences. Yes, the United States and China will compete as the two dominant economic powers in the 21st century, but there’s nothing wrong with that.²⁰ Surely, we can negotiate trade relationships that are fair. If we invest in education of our young people – to assure that all Americans have equal rights and opportunity – we have nothing to fear from competition and much to gain from cooperation.⁷

The 3rd party can be the force that finally reduces the power of the military-industrial-congressional complex, allowing greater investment in young people. This will strengthen our international stature and do much more to assure the security of our nation than any military build-up or military action possibly could.

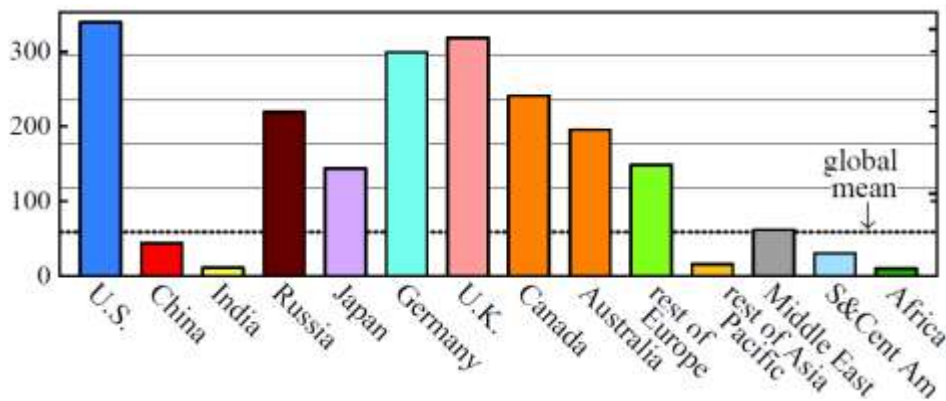


Fig. 47.6. Cumulative 1751-2020 fossil fuel carbon emissions (tons C/person; 2020 populations). Horizontal lines are multiples of the global mean.⁷

¹⁹ Hansen, J., M. Sato, R. Ruedy, P. Kharecha, A. Lacis, et al., [Dangerous human-made interference with climate: A GISS modelE study](#). *Atmos. Chem. Phys.* **7**, 2287-2312, 2007; Matthews, H.D., N.P. Gillett, P.A. Stott and K. Zickfeld, [The proportionality of global warming to cumulative carbon emission](#), *Nature* **459**, 829-832, 2009.

²⁰ Ying, Fu, [Cooperative competition is possible between China and the U.S.](#), New York Times, 24 Nov. 2020.

Work status and funding appeal. Some people have asked: what happened to *Sophie's Planet*? After finishing 47 of 50 chapters, I temporarily suspended writing. I wanted to see what President Biden would do in his first year in office and what well-hyped COP26 would produce. I will write those concluding chapters soon, after I finish work for a couple of science papers.

Government posturing at COP26 was largely hogwash, as I recently described in [A Realistic Path to a Bright Future](#). Global warming has accelerated in the past several years, Earth's energy imbalance has increased dramatically, and the growth rate of greenhouse gases is not slowing – in fact it has increased a bit. The world needs good advice, and I hope that we can contribute to that.

We are grateful for the public support of Climate Science, Awareness and Solutions that we received in the past two years after we lost two of our long-term major funders ([Two Gentlemen](#)). This, and matching support from the Grantham Foundation, allowed our program to continue to function. We hope for continuation of such public support for one more year. Please consider a donation to either our CSAS program at Columbia University (which supports Pushker Kharecha – my deputy and expert in carbon cycle and energy – and Makiko Sato – physicist and data expert) or our non-profit CSAS.inc (which supports our communications consultant Eunbi Jeong and our work with attorney Dan Galpern on legal cases aimed at affecting the policies of the fossil fuel industry and governments, and other expenses – computers, copiers, travel, etc. – without overhead.) CSAS.inc is advised by a wonderful group of climate experts and advocates including Betsy Taylor (President), Bill McKibben (Vice President), Larry Travis (Treasurer), Jay R. Halfon (Secretary), Jim Miller, and Jeff Sachs. You can learn more about them [here](#).

Contributions to CSAS at Columbia University can be made directly at <https://csas.givewell.columbia.edu/#>. This is the safest and fastest way to give directly to our Columbia program. Should you still prefer to send a check, please make it **payable to** “The Trustees of Columbia University” and include **a note** on the memo line that the gift is for “Earth Institute’s Program on Climate Science, Awareness and Solutions.”

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Climate Science, Awareness and Solutions
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Donation instructions are also on our giving page:

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The work we are doing with Dan Galpern on the legal front is equally important as the science. During 2021 I worked closely with Dan in three critical areas: (1) Challenges to domestic and foreign fossil fuel expansion projects, (2) Pressing the Biden Administration and the Environmental Protection Agency (EPA) to adopt an effective decarbonization program, and (3) Innovations in law and policy to hold the carbon majors accountable for causing or exacerbating Earth's Energy Imbalance.—d

As for the first area, we assisted, via expert declarations or public communications, in Power River Basin coal mining expansions in Montana, and new off-shore drilling operations in the North Sea, among others. We also prosecuted the State of California and the US Forest Service for their flagrantly damaging clear-cutting of old-growth trees on the western board of Yosemite National Park.

As for the second area, we continue to press the Biden team, including the EPA, to impose a rising carbon fee *under existing statutory authority* to phase-out fossil fuel emissions. Congressional inaction, therefore, is plainly no excuse. *See* the whole story and sign our petition to the President [here](#).

And as for the third, we are now readying another petition *to compel EPA* not only to collect a fee from carbon majors for new emissions, but also pay to remove excess atmospheric CO₂ (and other legacy GHG emissions) for which they are accountable under fundamental common law and statutory principles.

Your support will help us press forward in these three areas, both in the halls of government and in court, during 2022.

The next 10 years – the 4th decade since adoption of the 1992 Framework Convention on Climate Change – will be crucial for getting the world onto a path toward a long-term salubrious climate with reasonably stable shore lines. That is still possible, I am confident. In my opinion, the biggest threat – as you may already have inferred from this document – is the possibility that political polarization in the United States and elsewhere that could make good governance almost impossible. That's why I suggest that young people – and others who support the future of young people – create a 3rd political party in the United States to reduce polarization and promote good governance.

As for our work – which will continue to be in climate science and its implications for policy – the next 10 years are also crucial. During that period – because of inertia and momentum of the climate and energy systems – greenhouse gases and global warming will continue to increase. The error in the fanciful notion that global warming can be kept below 1.5°C (I used other words to describe this in [Bright Future](#)²) will be obvious, climate impacts will be increasingly apparent, and scientists will need to be prepared to offer good advice.

During 2022 – after *Sophie's Planet* is finished – we will prepare a proposal for long-term research that will help reveal requirements to achieve the goal of a long-term salubrious climate with reasonably stable shorelines. The major part of this will involve analysis of what happened during the prior (Eemian) interglacial period, when global temperature was about the same as today and sea level suddenly (within less than a century) increased several meters, perhaps from collapse of the West Antarctic ice sheet.